

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) A method of controlling the displacements of a moving portion of a multi-axis robot along a path, the method being characterized in that it comprises the steps consisting in comprising:

- providing movement instructions [[(300)]] to a path generator [[(400)]], the instructions including at least information relating to the shape of the path [[(320)]] and to force setpoints [[(310)]];
- calculating an external force signal [[(800)]] representing at least one component of the force [[(F)]] exerted by said moving portion [[(0)]] on its environment;
- acting at a predetermined sampling frequency to provide said external force signal [[(800)]] to said path generator [[(400)]];
- calculating, with said path generator [[(400)]] and at a predetermined sampling frequency, movement setpoints [[(500)]] along said path [[(320)]] in such a manner as to minimize the difference between the projection [[(FT)]] of the external force

Appl. No. 10/582,297 Docket: 15447NP

onto the tangent [[(T)]] of the path and the projection of the force setpoint onto said tangent; and

· delivering said movement setpoints [[(500)]] to a servo-control means ~~(601-606)~~ enabling at least one axis of said robot [[(600)]] to be set into movement in compliance with said movement setpoints [[(500)]].

2. (Currently Amended) [[A]] The method according to claim 1, characterized in that wherein said external force signal [[(800)]] is calculated from information representing the current flowing in at least one actuator ~~(601-606)~~ of said robot [[(600)]].

3. (Currently Amended) [[A]] The method according to claim 1, characterized in that it includes a step consisting in including using a dynamic model [[(712)]] of said robot [[(600)]] while calculating said external force signal [[(800)]].

4. (Currently Amended) [[A]] The method according to claim 1, characterized in that it includes a step consisting in including supplying said path generator [[(400)]] with at least one velocity limit value [[(330)]] and/or at least one acceleration limit value [[(340)]] for taking into account while calculating

said movement setpoints [[(500)]], such that said setpoints comply with said limit value(s).

5. (Currently Amended) Apparatus for controlling the displacements of a moving portion of a multi-axis robot along a path, ~~the apparatus being characterized in that it comprises comprising:~~

- a path generator [[(400)]] suitable for calculating movement setpoints [[(500)]] as a function of movement instructions [[(300)]] including at least information relating to the shape of the path [[(320)]] and to its force setpoints [[(310)]]; and

- a force estimator [[(700)]] suitable for generating an external force signal [[(800)]] representing at least one component of the force [[(F)]] exerted by said moving portion [[(O)]] on its environment and for delivering said signal to said path generator at a predetermined sampling frequency, where said path generator is suitable for calculating said movement setpoints [[(500)]] along said path [[(320)]] at a predetermined sampling frequency in such a manner as to minimize the difference between the projection [[(FT)]] of the external force on the tangent [[(T)]] to the path and the projection of the force setpoint onto said tangent, said movement setpoints [[(500)]]

Appl. No. 10/582,297 Docket: 15447NP

being delivered to a servo-control means ~~(601-606)~~ enabling at least one axis of said robot [[(600)]] to be set into movement.

6. (Currently Amended) ~~Apparatus~~ The apparatus according to claim 5, characterized in that it comprises further including a program interpreter means [[(200)]] suitable for executing programs containing movement instructions [[(300)]] enabling at least the shape of the path [[(320)]] and force setpoints [[(310)]] to be specified.